Technical and economic indicators characterize the possibility of production of products of a given nomenclature and quality and are the criteria for assessing its economic feasibility and profitability. They are used to assess the status, plan and update production.

The yield of the target product (η) is the ratio of the mass (quantity) of the obtained product to the mass of raw materials spent on its production.

For a one-step process, $A \rightarrow B$, the yield is:

$$\eta_B = m_B/m_A.$$

For a multistage process, the total yield (η_Σ) is equal to the product of the yields of each stage of the equation A → B → D:

$$\eta_\Sigma = \eta_A \cdot \eta_B \ldots \eta_n.$$

For irreversible reactions ($A \rightarrow B$), the yield is defined as the ratio of the mass of the product obtained in practice $m_B(p)$ to the theoretically possible mass according to the stoichiometric equation $m_B(t)$:

$$\eta = m_B(p)/m_B(t).$$

For a reversible reaction (A ⇄ B), the yield is defined as the ratio of the mass of a product obtained in practice, $m_B(p)$, to its theoretically maximum possible mass $m_{Bmax}(t)$ under given conditions:

$$\eta = m_B(p)/m_{Bmax}(t).$$

The degree of conversion or conversion (X) is the ratio of the mass of the raw material that entered into chemical conversion during the time τ to its initial mass:

$$X_A = (m_{Ao} - m_{A\tau})/m_{Ao}.$$

where: $\boldsymbol{m_{A\tau}}$ is the amount of raw material that has not entered into the reaction by the time τ;

$\boldsymbol{m_{Ao}}$ is the initial mass of the raw material;

($m_{Ao} - m_{A\tau}$) is the amount of raw material that entered into chemical transformation during the time τ.

The product yield and the degree of conversion of raw materials are expressed in mass fractions or percent.

Productivity (P) is the amount of the target product produced per unit of time, or the amount of raw materials processed per unit of time τ:

$$P = \boldsymbol{m}/\tau,$$

where $\boldsymbol{m}$ is the amount of product produced in time τ.

Productivity can be attributed both to a separate unit, and to the process line, workshop and enterprise as a whole.

Power (M) is the highest possible productivity (performance). Productivity and power are expressed in *kg/h*, *t/h*, *nm^3/day*, *t/year*, etc., depending on the scale of production.

The intensity (I) is a criterion of overall performance of the device. It allows to compare devices of various power by efficiency and is expressed in *kg/m^3* or *kg/m^2*. The intensity (the device, the car, the reactor) is the relation of its *productivity* to unit of the size characterizing the sizes of a working part of the device – *the volume of reactor V* or *the area of its section S*: